

OCT 07 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Viktor Mikhailovich Drobozyuk	Confirmation No:	5891
Serial No:	09/831,516	Group:	1731
Filed:	June 25, 2001	Examiner:	Alvo, Marc S.
For:	Aerodynamic Method for Making Tissue Paper		
Customer No.:	29127		
Attorney Docket No.	0029.0005		

APPELLANTS' BRIEF

VIA FACSIMILE: 703-872-9306
Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450,
Alexandria, Virginia 22313-1450

Sir:

This is the Applicants' appeal from the final Office Action, mailed May 12, 2004
(Paper No. 05072004).

Real Party of Interest

Gen3 Partners, Inc.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-10 are pending in this application. Of these claims 6-10 are withdrawn from consideration. Claims 1-5 stand finally rejected pursuant to the outstanding Office Action, and are the claims being appealed.

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Status of Amendments

All amendments have been entered. There were no post final amendments or proposed amendments.

Summary of Claimed Subject Matter

The direction is directed towards the selective moistening of a fibrous layer, wherein the fibrous layer has both impressed and non-impressed areas.

1. (Previously presented) An aerodynamic method of making tissue paper comprising the steps:
 - (a) preparing an aerosuspension of fibrous material (page 10, lines 5-110;
 - (b) forming a layer of fibers on a forming wire (7);
 - (c) transferring the layer of fibers to a profiling belt (3) having a pressing surface containing protruding elements for impressing first areas of the fibrous layer in contact therewith;
 - (d) contacting the layer of fibers disposed on the pressing surface of the profiling belt (3) with a moistening belt (4) having a lower sorption capacity than that of the first areas of the fibrous layer (8) to be impressed by the protruding elements and higher than that of second areas of the fibrous layer (8) that are not to be impressed by the protruding elements (page 11, lines 6-10 for moistening belt), (page 4, line 20 to page 5, line 11, for a-d); and
 - (e) selectively moistening the first areas of the layer of fibers by pressing the layer of fibers between the protruding elements of the profiling belt and the moistening belt (page 7, lines 1-3).

Grounds of Rejection to be Reviewed on Appeal

Claims 1-5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over WO 85/03962 in view of Dunning et al. (3,349,035 or Appel (4,375,448).

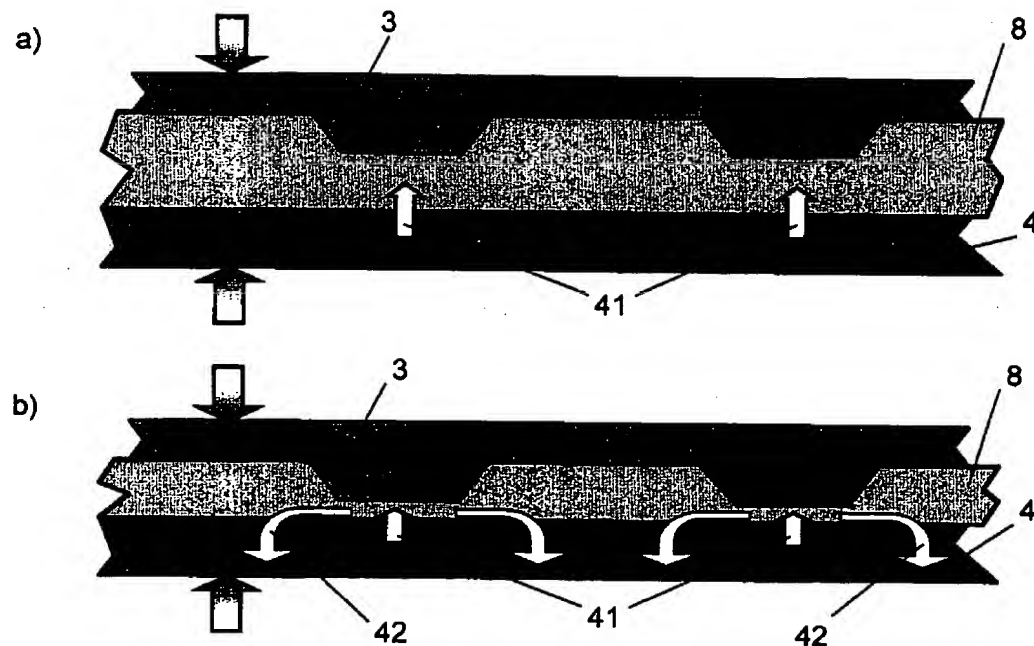
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Claims 1-5 stand rejected under 35 U.S.C. 112 first paragraph, as failing to comply with the enablement requirement.

Argument

Argument with respect to the 35 U.S.C. 112 rejection:

With regard to the rejection of Claim 1-5 under 35 U.S.C. 112, first and paragraphs, Applicant explains as follows and refers to two schematic illustrations of the method to supplement the explanation.



As described in the specification, page 6, lines 5-20, during the pressing step the portions of the layer of fibers 8, which are compressed by the protruding elements of the profiling belt 3, acquire a higher sorption capacity as compared to the sorption capacity of the

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moistening belt 4. Therefore, the capillary absorption pressure forces the moisture (shown as 41) from moistening belt 4 to migrate to the layer of fibers 8, as shown in (a).

As the layer of fibers 8 is further compacted (shown in (b)), mechanical squeezing out of the excess moisture from the compressed portions of the layer of fiber 8 begins. The squeezed out excess moisture from the compacted portions first migrates into the non-compacted portions (second areas of the fibrous layer), and only then migrates into the moistening belt under the influence of the capillary absorption forces. That migration flow is shown as 42 in (b).

Therefore, during the compacting step the flow of moisture between the moistening belt and the layer of fibers is facilitated by two independently occurring processes: the capillary adsorption pressure existing because of the different sorption capacities, and mechanical squeezing having nothing to do with the sorption capacity of either the moistening belt or the fibrous layer.

The described difference in the sorption capacities causes the compacted portions of the fibrous layer to become fully saturated with moisture. Closer to the end of the compacting process the excess moisture is mechanically squeezed out. As the squeezed out moisture migrates into the non-compacted portions of the fibrous layer, which are not compacted, the excess water has to be removed from the non-compacted portions. The removal is achieved by providing different sorption capacities of the moistening belt and the fibrous layer, which difference forces the excess moisture to flow from the non-compacted portions to the moistening belt.

The specification describes the above articulated process as follows (page 6, lines 6-16):

In the course of pressing, the sections of fibrous layer that are in the areas of protruding relief elements get compacted, which results in an increase of absorbency of the fibrous layer, due to the increase in the pressure of capillary absorption. When the fibrous layer absorbency reaches a value equal to the value of the same parameter of the moistening belt, the sections of the fibrous layer being compacted begin to absorb water from the moistening belt surface. With further compaction of the fibrous layer the excess water is squeezed out from the compacted

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sections into the non-compacted sections, and due to the difference in capillary absorption pressures, this water returns to the moistening belt.

In the final Office Action, the Patent Office missed the fact that it is further into the compacting step that the excess water is squeezed out and that the squeezing out step is not associated with capillary absorption forces. The referenced capillary forces relate to the flow of water from the non-compacted portions into the moistening belt having a higher sorption cap, which is consistent with the process and claimed in Claims 1-5. Therefore, withdrawal of the rejection of Claims 1-5 under 35 U.S.C. 112, first and paragraphs, as well as allowance of Claim s 1-5, is requested.

The Examiner was not convinced by the above explanation, saying (in the advisory action):

"Continuation of 5 does not place the application in condition for allowance because: the claimed sorption capacity would have been obvious for the reasons set forth in the final rejection. Applicant has still not explained how has still not explained how the moistening belt has a lower sorption capacity than the impressed areas and higher than the not impressed areas. This would mean that the impressed areas have a higher sorption capacity than the not impressed areas. On page 5 of the response figure 3 shows the fluid flowing from the impressed areas to the not impressed areas. This would result in the not impressed areas having a higher sorption capacity which contradicts the specification and claims."

Applicants provide further explanation. The sorption capacity of paper is determined in part by the local surface area of the fiber layer. Say that a paper has an initial area of 1, and a sorption value of 1 (arbitrary units of g water/unit area). If ridges and valleys are made (as described on page 3, lines12-18), greater local surface area is provided. For example, if the ridges and valleys have 45 degree corners, the local area will increase by the square root of 2, to have an area of 1.414, and a corresponding sorption capacity of 1.414. If a moistening belt having sorption capacity of 1.2 is then used, it will have a lower sorption than the impressed portions of the fiber layer (sorption capacity 1.414), and a higher sorption than the not impressed portions of the fiber layer

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(sorption capacity of 1). How to make such a moisture belt is enabled on page 11, lines 6-10.

Therefore, Applicant respectfully requests that the rejection be withdrawn and independent Claim 1 be allowed.

Claims 2-5 depend off now allowable Claim 1 and therefore are also allowable. Allowance of dependent Claims 2-5 is respectfully requested.

Argument with respect to the 35 U.S.C. 103(a) rejection

With regard to the rejection of Claims 1-5 under 35 U.S.C. 103(a) over WO 85/03962 in view of Dunning (3,949,035) and Appel (4,375,458), Applicant asserts as follows.

Specifically, Applicant draws the attention of the Patent Office to the fact that none of the cited patents discloses selectively moistening the first areas of the layer of fibers by pressing the layer of fibers between the protruding elements of the profiling belt and the moistening belt. In the method claimed in Claim 1 it is sufficient to selectively moist the fibers between the protruding elements and the moistening belt. To achieve selective moistening, the moistening belt is selected to have specific properties, such as "a lower sorption capacity than that of the first areas of the fibrous layer to be impressed by the protruding elements and higher than that of second areas of the fibrous layer that are not to be impressed by the protruding elements". None of the cited patents teaches or suggests or even hints to selective moistening by introducing a moistening belt with the claimed sorption capacity.

To the contrary, Dunning discloses uniform moistening by providing a number of spray nozzles that should partially overlap to achieve a substantially uniform cross-directional water application. (Col. 9, lines 3-11). No sorption capacity properties of the moistening belt are disclosed in Dunning. No such teaching was found in Appel or WO85/03962 either.

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Therefore, Applicant respectfully requests that the rejection be withdrawn and independent Claim 1 be allowed.

Claims 2-5 depend off now allowable Claim 1 and therefore are also allowable. Allowance of dependent Claims 2-5 is respectfully requested.

For the foregoing reasons, Applicants believe that the pending rejections should be withdrawn, and that the present application should be passed to issue. Should any questions arise, please contact the undersigned.

Respectfully submitted,

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Claims Appendix

1. (Previously presented) An aerodynamic method of making tissue paper comprising the steps:
 - (a) preparing an aerosuspension of fibrous material;
 - (b) forming a layer of fibers on a forming wire;
 - (c) transferring the layer of fibers to a profiling belt having a pressing surface containing protruding elements for impressing first areas of the fibrous layer in contact therewith;
 - (d) contacting the layer of fibers disposed on the pressing surface of the profiling belt with a moistening belt having a lower sorption capacity than that of the first areas of the fibrous layer to be impressed by the protruding elements and higher than that of second areas of the fibrous layer that are not to be impressed by the protruding elements; and
 - (e) selectively moistening the first areas of the layer of fibers by pressing the layer of fibers between the protruding elements of the profiling belt and the moistening belt.
2. (Original) The method of claim 1, wherein the step of transferring comprises a step of transferring the layer of fibers to a profiling belt having a pressing surface containing protruding elements for impressing first areas of the fibrous layer in contact therewith, and a distance between mutually-adjacent protruding elements is not greater than an average length of individual fibers of the layer of fibers.
3. (Original) The method of claim 1, wherein the step of transferring is performed using a profiling belt that comprises a wire made of threads interwoven such that nodes formed by said interwoven threads form the protruding elements of the pressing surface, and the protruding elements having relatively flat surface areas contacting the layer of fibers.

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4. (Original) The method of claim 1, wherein the step of contacting comprises a step of contacting the layer of fibers disposed on the pressing surface of the profiling belt with a moistening wire.

5. (Original) The method of claim 1, wherein the step preparing an aerosuspension comprises a step of preparing an aerosuspension of fibrous material having a moisture content that provides saturation of walls of the fibers.

6. (Withdrawn) An apparatus for making tissue paper by an aerodynamic method, the apparatus comprising:

a forming wire for receiving an aerosuspension of fibers and forming a layer of fibers thereon;

a profiling belt having a pressing surface comprising protruding elements configured and arranged for contacting first areas of said layer of fibers, thereby impressing the first areas of said layer of fibers;

a moistening belt comprising a material having a sorption capacity lower than a sorption capacity of the first areas of said layer of fibers, and higher than a sorption capacity of second areas of said layer of fibers that are not contacted by said protruding elements; and

a pressing assembly for impressing the layer of fibers between the profiling belt and the moistening belt.

7. (Withdrawn) The apparatus of claim 6, wherein said pressing assembly comprises a pair of pressure rollers for exerting a force on the layer of fibers, the profiling belt, and the moistening belt.

8. (Withdrawn) The apparatus of claim 6, wherein a distance between mutually-adjacent protruding elements of the pressing surface of said profiling belt is not greater than an average length of individual fibers of the layer of fibers.

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9. (Withdrawn) The apparatus of claim 6, wherein the protruding elements of said pressing surface have elliptical profiles.

10. (Withdrawn) An aerodynamic method for tissue paper making comprising the steps: prepare an aerosuspension out of cellulose fibers or other fibrous material, forming of a layer of fibers on a moving forming wire;

moistening the formed layer of fibers; and

and pressing and drying said formed layer,,

wherein the pressing is performed by a pressing means having a pressing surface, for contacting with said layer of fibers, which is made as a relief surface and the distance between the protruding relief elements on the pressing surface doesn't exceed the average length of fibers; and,

wherein the method is distinguished by the fact that during pressing, the formed layer of fibers is placed on an additional profiling felt, the surface of which facing said layer of fibers represents said pressing surface, and moistening of the formed layer of fibers is performed concurrently with pressing for which purpose an additional moistening felt is used, and said moistening felt is accommodated in such a way that pressing action is exerted concurrently on profiling and moistening felts and on the layer of fibers located between said felts, and such a material is used as a moistening felt the sorption capacity of which is lower than sorption capacity of those areas of said layer of fibers that are pressed due to the protruding relief elements, and at the same time the sorption capacity of said material is higher than the areas of said layer of fibers that are non-pressed by said relief elements, and saturation of moistening felt with water is performed outside the pressing zone.

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Evidence Appendix

None

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Related proceedings appendix

None